

Bachelor of Science (F.Y. B.Sc.) (Part – I) (CBCS Pattern) Second Semester CBCS
USELT04 - Electronics Paper – II : Digital Integrated Circuit

P. Pages : 2

Time : Three Hours



GUG/W/18/11579

Max. Marks : 50

- Notes :
1. All questions are compulsory.
 2. All questions carry equal marks.
 3. Draw neat and labelled diagrams wherever necessary.
 4. Use of log tables calculators are allowed.

1. Either :

- a) What are SOP and POS form of equation. Explain with suitable example. Simplify the following Boolean expression using k – map. **6**

$$y = \overline{A}\overline{B}\overline{C}D + ABCD + ABC\overline{D} + A\overline{B}CD \quad \mathbf{4}$$

OR

- b) Explain the concept of multiplexer. Draw the logic diagram of 4 : 1 MUX and explain its working. **3+7**

2. Either :

- a) What are the disadvantages of clocked RSFF and how it can be eliminated in DFF. Explain. Differentiate between Asynchronous and Synchronous input in FFS. **8+2**

OR

- b) What is race around condition? Explain with suitable diagram how this race round condition can be eliminated in JKMS flip-flop. **3+7**

3. Either :

- a) Explain the working of 4 bit ripple counter. Give its truth table and timing diagram. **6+4**

OR

- b) What is Synchronous counter? State its advantages. Explain the working of 3 bit Synchronous counter with the help of logic diagram. **2+2+6**

4. Either :

- a) What is shift register? Explain construction and working of SIPO shift register. Give its truth table. **1+6+3**

OR

- b) What is A/D converter? Explain construction and working of successive approximation type ADC with suitable example. **2+8**

5. Attempt **any ten** of the followings.

1x10

- i) Draw logic diagram of full adder.
- ii) Define encoder.
- iii) What is Demultiplexer?
- iv) What is negative edge triggering?
- v) State the use of preset and clear inputs in flip flop.
- vi) Draw logic diagram of RS Flip flop using NOR gates.
- vii) What is modulus of counter?
- viii) State the use of counter.
- ix) Give the truth table of 3 – bit down counter.
- x) Write the equation for 4 bit weighted resistor ladder type D/A Converter.
- xi) Define accuracy in D/A Converter.
- xii) What is sample and hold circuit.
